



Transit America Inc.

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GROUND WATER FINAL REPORT

FOR THE

TRANSIT AMERICA INC. RED LION ROAD FACILITY

Submitted by: Transit America Inc.
One Red Lion Road
Philadelphia, Pennsylvania 19115

Submitted to: Pennsylvania Department of Environmental Protection
Environmental Cleanup Program
Southeast Regional Office
Conshohocken, Pa. 19428

Persuant to: Pennsylvania Land Recycling and
Environmental Remediation Standards Act (Act 2)

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Section 1 - Introduction

1.1 Executive Summary

The property owned by Transit America Inc. (Transit America) is approximately 214 acres, located in Philadelphia and Montgomery Counties, Pennsylvania. A Site Plan is included as Figure 1. Twenty of the 214 acres lie south of Red Lion Road; the other 194 acres lie north of Red Lion Road. Manufacturing activities on the property were terminated in April 1987. Since 1987, Transit America has characterized in detail the environmental conditions on the property and has successfully completed a number of environmental remedial action programs throughout the property involving stormwater, ground water, surface and subsurface soils, underground storage tanks, and facility structures. The property, its history, site environmental programs and remedial actions are described in the *Act 2 Remedial Investigation (RI) Report* (March 1998).

After carefully analyzing options for the redevelopment of the property, Transit America selected the construction of an 18-hole public golf course and associated facilities as the best future use of the property for the 194 acres located north of Red Lion Road. The golf course development plan is presented in detail in the *RI Report*. The 20 acres south of Red Lion Road, while included in Transit America's Act 2 project, are not currently included in the golf course plan and may be developed for other purposes. The golf course construction is targeted for completion in 2001. The Act 2 cleanup program was developed consistent with the golf course development plan.

In compliance with the Land Recycling and Environmental Remediation Standards (Act 2), Transit America prepared a *Remedial Investigation Report* (including the *Ground Water RI Report*), *Risk Assessment Report* and *Cleanup Plan*, which were submitted to PADEP in March 1998. These Act 2 documents were approved by PADEP on May 7, 1998. The *Remedial Investigation Report (Volumes 1 and 2)* contains a detailed description of environmental conditions at the Site and describes the numerous investigation and remedial actions undertaken by Transit America on a voluntary basis since 1987. The *Ground Water RI Report (Volume 2)* presents the Site ground water data and fate and transport evaluation for regulated substances in ground water. The *Ground Water RI Report* findings provided the basis for this *Ground Water Final Report* and are summarized in Section 1.2 below. The *Risk Assessment Report* evaluated human health and ecological risks associated with regulated substances present at the Site and confirmed that the golf course development plan would be implemented while attaining the remediation standards established by Act 2.

The *Cleanup Plan* documented the remedial measures to be conducted to achieve the Act 2 standards for soil and ground water and presented the Golf Course Development Plan. For ground water, a no exposure pathway exists for the five ground water VOC plumes beneath the property (Figure 1). For one of the five VOC plumes, located on the western sector of the property (VOC Plume Area 3), the potential ground water exposure pathway was initially eliminated through the operation of a ground water extraction system. In May 1999, consistent with the *Cleanup Plan*.

(detailed in this *Ground Water Final Report*) and after consultation with PADEP, ground water extraction was discontinued in VOC Plume Area 3 after downgradient users along Pine Road had connected to the public water supply thereby continuing to maintain a no exposure pathway.

The purpose of this *Ground Water Final Report* is to demonstrate that Transit America has attained the standards contained in the *Cleanup Plan*.

1.2 Ground Water RI Report Findings

The *Ground Water RI Report (RI Report, Volume 2)* provided the characterization of ground water conditions and the results of a fate and transport evaluation, including modeling, and contained the following findings:

- VOCs are present in ground water in five distinct plumes in the subsurface at the property. Two VOCs, tetrachloroethylene (PCE) and trichloroethylene (TCE), exceed the Act 2 Statewide Health Standard, Used-Aquifer, ground water medium specific concentration (MSC) at the property boundary.
- Use of ground water on the property for human consumption or agricultural purposes does not occur and will not occur under any future use scenario.
- Based on a fate and transport evaluation, no complete ground water exposure pathway exists in the downgradient directions from the property boundary. This determination has been made consistent with the criteria set forth in the Act 2

regulations, §250.404, and was approved by PADEP.

- At the time the *Ground Water RI Report* was submitted (March 1998), ground water was being used at four residences along Pine Road located in a west-to-northwest direction from the property boundary. Accordingly, a potential ground water exposure pathway was identified at that time downgradient of VOC Plume Area 3 that was being controlled by the ongoing ground water extraction/containment process. Subsequent to PADEP's approval of the *Cleanup Plan* and as expressly contemplated in that document, these four downgradient users connected to the public water supply, thereby eliminating that potential exposure pathway and obviating the need for continued ground water pumping in that area.
- The fate and transport evaluation presented in the *Ground Water RI Report* was conducted in accordance with the Act 2 regulations using 1) the most stringent exposure factors for the future golf course, 2) theoretically elevated on-site ground water concentrations to provide additional conservatism and 3) hypothetically assumed presence of on-going sources of ground water VOCs on the site. The results of this evaluation demonstrate that there is no complete ground water exposure pathway for VOCs or other regulated substances.
- As part of the fate and transport evaluation, vapor intrusion modeling was performed for those VOC compounds detected in perimeter wells to identify the theoretical

VOC concentrations in ground water that could be present at the property perimeter without producing an unacceptable indoor air exposure at the closest downgradient receptors. For the purpose of this evaluation, it was assumed that exposure would result from volatilization of VOCs from the ground water plumes into residential basements. The calculated minimum VOC concentrations at the perimeter required to produce an unacceptable indoor air exposure were all substantially higher than any of the actual VOC concentrations measured in perimeter ground water monitoring wells since the inception of monitoring in 1988, thereby demonstrating no adverse impacts from this potential exposure pathway.

- No exposure pathway in ground water is present or predicted to be present for non-VOC regulated substances detected in ground water, as shown by the fate and transport evaluation. These non-VOC regulated substances were identified in Section 1.2.4 of the *Ground Water RI Report* and are presented in Section 4 of this report.

1.3 Ground Water Remediation Standards

Based on the findings presented in the *Ground Water RI Report* and summarized in the *Cleanup Plan*, a no exposure pathway (pathway elimination) standard is the approved Site-Specific Standard for regulated substances in ground water (VOCs and non-VOCs) at the Site. As a

requirement of the Site-Specific Standard for ground water, numerical site-specific standards were established for VOC concentrations in ground water for the three most prevalent and mobile VOC compounds: PCE, TCE and cis-1,2-DCE. While other regulated substances are also present in ground water and are included in this report for purposes of liability protection under Section 501 of Act 2, PADEP agreed that the numerical standards for these VOCs would be sufficient for the Act 2 attainment demonstration due to the behavior of VOCs in the environment. These standards, summarized in Table 1, were approved by PADEP in the *Cleanup Plan* for VOC Plume Areas 1, 2, 4 and 5 (shown in Figure 1) based on the results of fate and transport modeling, including vapor intrusion modeling. The numerical site-specific standards apply at the Point of Compliance monitoring wells, which were approved by PADEP in the *Ground Water RI Report* for VOC Plume Areas 1 through 5 and are also shown in Figure 1. The rationale and development of the numerical standards is presented in detail in the *Cleanup Plan* (Section 3.4).

As described in the *Ground Water RI Report*, a detailed survey of ground water use in the vicinity of the Site was performed to identify the nature and location of reported private or commercial wells. The United States Geological Survey (Malvern, Pennsylvania office), Pennsylvania Bureau of Topographic and Geologic Surveys (Harrisburg, Pennsylvania), Philadelphia Suburban Water Company (PSWCo) and City of Philadelphia Water Department (PWD) were contacted to obtain available well data. The results of this survey indicated that the area surrounding the Site is serviced by public water either by the PWD (Philadelphia County portion) or the PSWCo

(Montgomery County portion). The PWD provides service to Transit America and areas surrounding the Site in Philadelphia County. PSWCo supplies water to users in Montgomery County. Detailed private well surveys were also undertaken to identify potential private wells adjacent or hydraulically downgradient of the Site. For the Philadelphia County well survey area, the PWD and County Health Department were contacted to develop a list of private properties potentially not serviced by public water (list provided by PWD). The Health Department provided a list of "sewer only" customers. These lists were used in conjunction with land planning maps and street addresses to identify properties without public water service, and therefore potential private well locations. Based on this survey, no private wells or ground water users are identified within 1,000 feet of the Site's perimeter in the Philadelphia County area (encompassing VOC plume Areas 1, 2, 4 and 5)

For the Montgomery County area adjacent to the site, PSWCo customer records were reviewed and cross-referenced to tax maps to identify potential private residential or commercial properties not serviced by public water. This survey included the area hydraulically downgradient of the identified VOC Plume Area 3 within one mile of the site. This survey distance was selected for general reference only and was limited to a shorter distance if hydrogeologic boundaries (surface water features within topographic lows) were encountered. This resulted in the identification of potential properties which are not serviced by public water.

Based on this analysis, private properties in Montgomery County within 1,000 feet downgradient of the VOC plume areas at the site perimeter and not served by public water were included in door-to-door surveys to confirm water use. As described in the *Ground Water RI Report*, as of March 10, 1998, four residential properties within 1,000 feet of the VOC Plume Area 3 at the Site perimeter were not connected to a public water supply. Public water connection survey activities subsequent to the preparation of the *Ground Water RI Report*, including monthly contacts with PSWCo, continued to track and update the status of private well users in this area. As a result of these continued surveys, it has been confirmed that the four previously identified residences are now served by PSWCo, as shown in Figure 2.

Therefore, based on the Philadelphia and Montgomery County ground water use surveys including follow-up activities, it was confirmed that ground water is not used for drinking water or agricultural purposes in the downgradient areas of the five VOC plumes within 1,000 feet of the site property boundaries.

As provided in the *Cleanup Plan*, since these residences connected to the public water supply system, a no exposure pathway standard can be met for VOC Plume Area 3 without the need for ground water extraction. The fate and transport modeling evaluation and development of numerical Site-Specific standards for VOC concentrations for VOC Plume Area 3 were completed assuming no ground water extraction consistent with the fate and transport evaluation for VOC Plume Areas 1, 2, 4 and 5, detailed in the *Ground Water RI Report*. This evaluation was reviewed with PADEP